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Pulpwood Production in the North-Central Region by County, 1983

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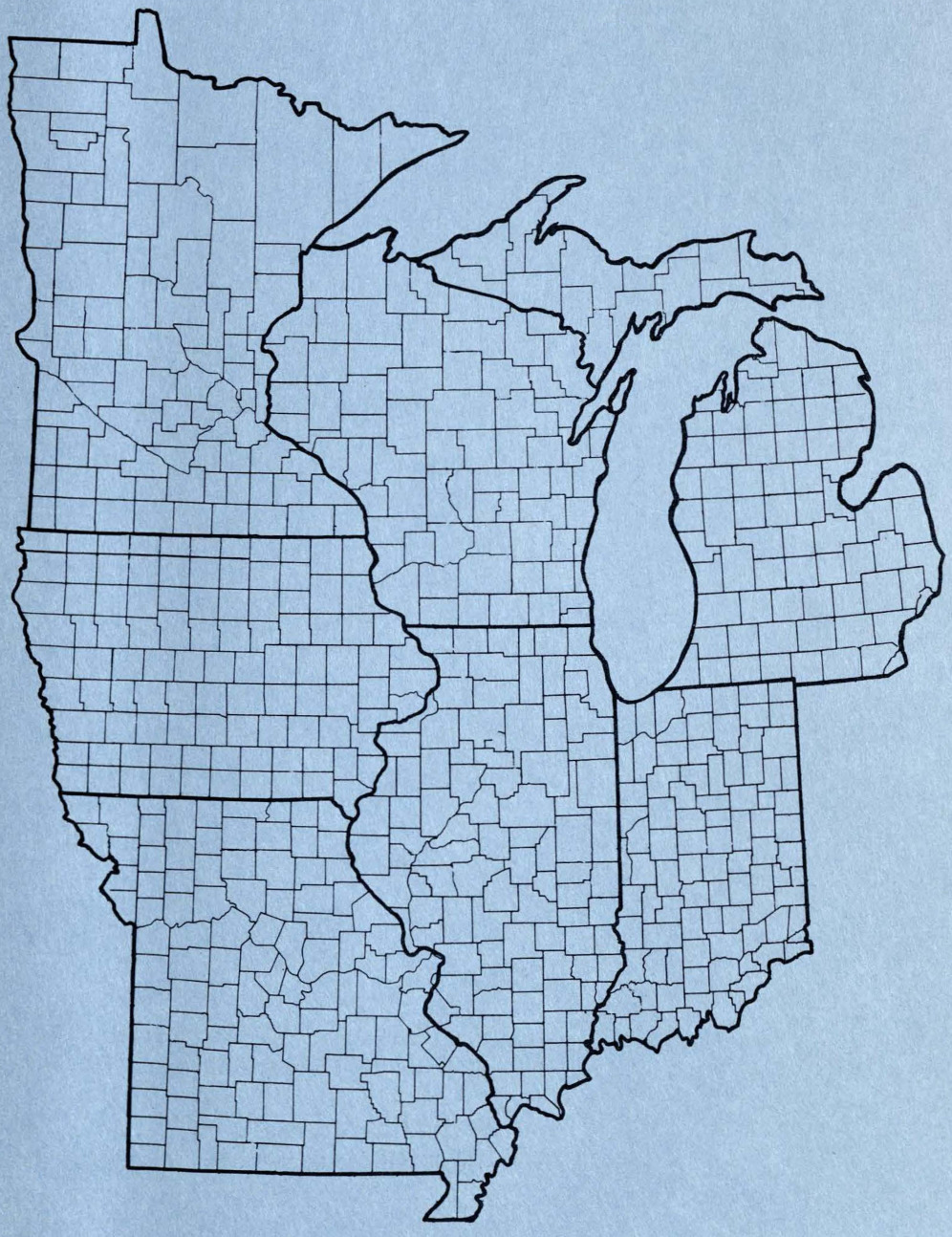

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HIGHLIGHTS

Lake States

Pulpwood production rose 18 percent to a record 6.54 million cords in 1983. The aspen harvest accounted for most of the gain, rising 923,000 cords, and shattering the previous aspen record harvest in 1981 by 37 percent. Birch and balsam poplar harvests also reached all-time highs. Output from softwoods fell in every species group except cedar and white pine. Nine percent of the total production was whole-tree chips; aspen remained the preferred species. Output nearly doubled for flakeboard plants and gained 8 percent for pulpmills. Production broke records in each State and climbed 29 percent in Minnesota, 23 percent in Michigan, and 8 percent in Wisconsin. Michigan output exceeded 2 million cords for the first time. Aspen constituted 77 percent of the roundwood cut in Minnesota.

For the third straight year, softwood residue imports from Canada fell and were slightly more than one-third of the peak imports in 1980. Twenty-three percent of Wisconsin's pulpwood requirements came from out-of-State.

Central States

Central States pulpwood production increased to 448,000 cords, the highest level since 1979. Nearly 7 out of 10 cords were residue from wood-using mills. Indiana, the leading producer, topped all previous years. Each of the other Central States had production gains. Exports, 68 percent of the total, rose for the fifth consecutive year.

Pulpwood receipts expanded to 148,000 cords from 106,000 cords in 1982. Nevertheless, receipts were the second lowest since 1958. Only 5,000 cords were imported.

Except for 1982, production has exceeded 400,000 cords annually since 1969. More than 3 out of 5 cords produced are likely to continue being exported to states adjacent to the Central States.

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PULPWOOD PRODUCTION IN THE NORTH CENTRAL REGION BY COUNTY, 1983

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This is the 25th annual report of the pulpwood harvest in Lake States counties and the 24th annual report of the Central States harvest. Pulpwood constitutes more than half the industrial timber products harvested annually in the Lake States (Michigan, Minnesota, and Wisconsin) and is an important product in the Central States (Illinois, Indiana, Iowa, and Missouri).

Current detailed pulpwood production[1] information is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, and forest industry development. Also, researchers need current pulpwood information to plan projects.

Since 1979, we have included logs, bolts and wood residue used in manufacturing particleboard, waferboard, and oriented strand board in this annual series. Together, these boards are called flakeboards. Wood used at flakeboard plants is identical or nearly identical to wood used at pulpmills.

Because flakeboard plants primarily use aspen and wood residue, including them does not distort roundwood use trends for other species nor preclude comparing survey results with 1978 and previous year.

Pulpmills and flakeboard plants using North Central States timber in 1983 reported their pulpwood receipts[2] by species groups and counties of origin. This report presents the results of the survey, analyzes the data where appropriate, compares results with 1982 or earlier years, and discusses trends in pulpwood production and use.

The Lake States and Central States are discussed separately because the timber types in each area are different and less information can be released about the Central States (more detailed data on pulpwood production and receipts in the Central States would reveal the operations of individual mills).

Pulpwood production in Minnesota is completely and accurately shown. However, to prevent disclosure of confidential information about softwood pulpwood use by individual companies, the total quantity of softwood pulpwood imports and exports between Minnesota and Canada are not reported. **Thus, some Minnesota softwood shipped to Canada is shown as remaining and used in Minnesota, and receipts of Canadian softwood in Minnesota are understated.**

LAKE STATES

Production

Pulpwood production climbed from 5.52 million cords[3] in 1982 to a record 6.54 million cords in 1983, a gain of 18 percent (table 1). Of each 100 cords produced, 92 cords were roundwood (including chips from roundwood); the remainder was residue from wood-using plants.[4]

Major species cut were aspen (3,306,000 cords), jack pine (450,000 cords), red pine (302,000 cords), white birch (277,000 cords), and balsam fir (276,000 cords).

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[1] *Pulpwood production, determined from mill receipts, is the annual volume of pulpwood cut in a specific county or region, plus the annual wood residue volume produced by sawmills, veneer mills, etc., in a specific State or region that was used for pulp, particleboard, waferboard, or oriented-strand-board.*

[2] *Pulpwood receipts are the volume of wood received by mills in a specific State or region, regardless of the geographic source.*

[3] *All references to cords are in standard cords. A standard cord is 128 cubic feet of wood, bark, and air space.*

[4] *Residue is the byproduct from sawmills, veneer mills, cooperage mills, and other wood-using plants that is used for pulping and flakeboard. Residue includes slabs, edgings, veneer cores, sawdust, wood flour, and chips manufactured from slabs, edgings, and veneer cores.*

Table 1.--Production and imports of pulpwood, Lake States, 1983

(In standard cords, unpeeled)

Species and destination	Production by States [1]				Imports			Total receipts
	Michigan	Minnesota	Wisconsin	Regional total	Other U.S. [2]	Canada	Total imports	
Roundwood								
Cedar								
Michigan	23,579	--	303	23,882	--	--	--	23,882
Total	23,579	--	303	23,882	--	--	--	23,882
Balsam fir								
Michigan	62,137	--	640	62,777	--	--	--	62,777
Minnesota	--	86,804	233	87,037	--	--	--	87,037
Wisconsin	29,549	769	83,942	114,260	--	--	--	114,260
Exported [3]	9,616	2,592	--	12,208	--	--	--	--
Total	101,302	90,165	84,815	276,282	--	--	--	264,074
Hemlock								
Michigan	45,078	--	821	45,899	--	--	--	45,899
Wisconsin	3,361	--	39,617	42,978	--	--	--	42,978
Total	48,439	--	40,438	88,877	--	--	--	88,877
Jack pine								
Michigan	109,706	--	68	109,774	--	--	--	109,774
Minnesota	--	90,437	7,202	97,639	--	--	--	97,639 [5]
Wisconsin	35,972	9,175	194,896	240,043	4,783 [4]	--	4,783 [4]	244,826 [5]
Exported [3]	1,131	1,391	--	2,522	--	--	--	--
Total	146,809	101,003	202,166	449,978	4,783 [4]	--	4,783 [4]	452,239 [5]
Red pine								
Michigan	78,353	--	155	78,508	--	--	--	78,508
Minnesota	--	19,703	4,583	24,286	--	--	--	24,286
Wisconsin	15,108	5,500	178,426	199,034	--	--	--	199,034
Total	93,461	25,203	183,164	301,828	--	--	--	301,828
White pine								
Michigan	15,142	--	195	15,337	--	--	--	15,337
Minnesota	--	14,190	1,310	15,500	--	--	--	15,500
Wisconsin	1,120	35	25,353	26,508	--	--	--	26,508
Total	16,262	14,225	26,858	57,345	--	--	--	57,345
Spruce								
Michigan	50,607	--	502	51,109	--	--	--	51,109
Minnesota	--	74,126	110	74,236	--	3,708	3,708	77,944
Wisconsin	18,502	18,794	27,147	64,443	--	186	186	64,629
Exported [3]	8,523	2,034	--	10,557	--	--	--	--
Total	77,632	94,954	27,759	200,345	--	3,894	3,894	193,682
Tamarack								
Michigan	3,147	--	38	3,185	--	--	--	3,185
Minnesota	--	8,258	--	8,258	--	--	--	8,258
Wisconsin	3,700	17,802	5,903	27,405	--	--	--	27,405
Total	6,847	26,060	5,941	38,848	--	--	--	38,848
Ash								
Michigan	8,419	--	--	8,419	--	--	--	8,419
Wisconsin	2,634	316	46,836	49,786	--	--	--	49,786
Total	11,053	316	46,836	58,205	--	--	--	58,205
Aspen								
Michigan	744,116	--	2,175	746,291	--	--	--	746,291
Minnesota	--	1,274,316	38,376	1,312,692	--	--	--	1,312,692
Wisconsin	144,863	90,776	984,579	1,220,218	--	--	--	1,220,218
Exported [3]	--	26,474	--	26,474	--	--	--	--
Total	888,979	1,391,566	1,025,130	3,305,675	--	--	--	3,279,201
Balsam poplar								
Michigan	38,972	--	--	38,972	--	--	--	38,972
Minnesota	--	67,540	1,204	68,744	--	--	--	68,744
Wisconsin	634	--	260	894	--	--	--	894
Total	39,606	67,540	1,464	108,610	--	--	--	108,610
Basswood								
Michigan	20,668	--	--	20,668	--	--	--	20,668
Wisconsin	732	--	12,512	13,244	--	--	--	13,244
Total	21,400	--	12,512	33,912	--	--	--	33,912
Beech								
Michigan	17,530	--	--	17,530	--	--	--	17,530
Wisconsin	759	--	1,128	1,887	--	--	--	1,887
Total	18,289	--	1,128	19,417	--	--	--	19,417
White birch								
Michigan	87,745	--	948	88,693	--	--	--	88,693
Minnesota	--	1,258	--	1,258	--	--	--	1,258
Wisconsin	8,479	2,855	175,743	187,077	--	--	--	187,077
Total	96,224	4,113	176,691	277,028	--	--	--	277,028
Yellow birch								
Michigan	25,312	--	--	25,312	--	--	--	25,312
Wisconsin	8,135	42	21,244	29,421	--	--	--	29,421
Total	33,447	42	21,244	54,733	--	--	--	54,733
Cottonwood								
Michigan	2,111	--	--	2,111	--	--	--	2,111
Total	2,111	--	--	2,111	--	--	--	2,111
Elm								
Michigan	18,013	--	--	18,013	--	--	--	18,013
Wisconsin	21,572	137	55,802	77,511	--	--	--	77,511
Total	39,585	137	55,802	95,524	--	--	--	95,524

(Table 1 continued on next page)

(Table 1 continued)

Species and destination	Production by States[1]				Imports			Total receipts
	Michigan	Minnesota	Wisconsin	Regional total	Other U.S.[2]	Canada	Total imports	
Hickory								
Michigan	620	--	--	620	--	--	--	620
Wisconsin	--	--	374	374	--	--	--	374
Total	620	--	374	994	--	--	--	994
Hard maple								
Michigan	58,371	--	--	58,371	--	--	--	58,371
Wisconsin	36,673	400	141,571	178,644	--	--	--	178,644
Total	95,044	400	141,571	237,015	--	--	--	237,015
Soft maple								
Michigan	110,004	--	--	110,004	--	--	--	110,004
Wisconsin	13,783	129	95,451	109,363	--	--	--	109,363
Total	123,787	129	95,451	219,367	--	--	--	219,367
Red oak								
Michigan	68,086	--	--	68,086	--	--	--	68,086
Wisconsin	1,309	--	47,138	48,447	--	--	--	48,447
Total	69,395	--	47,138	116,533	--	--	--	116,533
White oak								
Michigan	22,899	--	--	22,899	--	--	--	22,899
Wisconsin	292	--	11,978	12,270	--	--	--	12,270
Total	23,191	--	11,978	35,169	--	--	--	35,169
Other hardwoods								
Michigan	5,491	--	--	5,491	--	--	--	5,491
Wisconsin	1,858	--	7,369	9,227	--	--	--	9,227
Total	7,349	--	7,369	14,718	--	--	--	14,718
Total roundwood								
Michigan	1,616,106	--	5,845	1,621,951	--	--	--	1,621,951
Minnesota	--	1,636,632	53,018	1,689,650	--	3,708	3,708	1,693,358
Wisconsin	349,035	146,730	2,157,269	2,653,034	4,783	186	4,969	2,658,003
Exported[3]	19,270	32,491	--	51,761	--	--	--	--
Total	1,984,411	1,815,853	2,216,132	6,016,396	4,783	3,894	8,677	5,973,312
Softwood residue								
Michigan	16,790	--	185	16,975	--	--	--	16,975
Minnesota	--	46,363	--	46,363	--	1,274	1,274	47,637
Wisconsin	3,983	7,704	47,759	59,446	131,836	31,003	162,839	222,285
Exported[3]	--	1,167	--	1,167	--	--	--	--
Total	20,773	55,234	47,944	123,951	131,836	32,277	164,113	286,897
Hardwood residue								
Michigan	114,065	--	16,627	130,692	17,390	--	17,390	148,082
Minnesota	--	36,657	--	36,657	--	4,203	4,203	40,860
Wisconsin	38,192	1,110	193,802	233,104	--	415	415	233,519
Exported[3]	--	929	--	929	--	--	--	--
Total	152,257	38,696	210,429	401,382	17,390	4,618	22,008	422,461
All wood material								
Michigan	1,746,961	--	22,657	1,769,618	17,390	--	17,390	1,787,008
Minnesota	--	1,719,652	53,018	1,772,670	--	9,185	9,185	1,781,855
Wisconsin	391,210	155,544	2,398,830	2,945,584	136,619	31,604	168,223	3,113,807
Exported[3]	19,270	34,587	--	53,857	--	--	--	--
Total	2,157,441	1,909,783	2,474,505	6,541,729	154,009	40,789	194,798	6,682,670

[1] Vertical columns of figures under box heading "Production by States" present the amount of pulpwood cut in each State.

[2] Mostly western States.

[3] Pulpwood shipped to mills outside of region.

[4] Ponderosa pine.

[5] Includes ponderosa pine from other U.S.

Other important species, each contributing more than 200,000 cords, were hard maple, soft maple, and spruce.

Pulpwood production from hardwoods rose above the previous high in 1981 by 915,000 cords. Pulpwood output from hardwood roundwood set a record, but the higher output from hardwood mill residue fell 56,000 cords short of the peak in 1981. Harvests of aspen, birch, and balsam poplar advanced to record levels. Aspen eclipsed the 1981 peak by 887,000 cords. Birch surpassed the 1980 high by 28,000 cords and balsam poplar reached a new high for the fourth consecutive year.

Softwood production fell 184,000 cords from 1982, although production from mill residue increased to a record 124,000 cords. Output dropped in each softwood species except cedar and white pine. Major declines were in jack pine (86,000 cords) and red pine (44,000 cords). Red pine set production records the previous 4 years and, despite the decline, had the second highest output in 1983.

Lake States loggers produced a record 604,000 cords of whole-tree chips[5] (WTC), up 31 percent from 1982. WTC accounted for 9 percent of the Lake States pulpwood output. One out of 5 cords produced in Michigan was WTC. Minnesota WTC output doubled from 1982; Wisconsin WTC output remained nominal even

[5] *Pulpwood produced from chipping entire trees (all portions of trees above ground, except the stumps).*

though production more than doubled. Production of WTC by species group and State was:

State	Softwoods	Aspen	Other hardwoods
	(Thousand cords)		
Michigan	18.0	292.4	124.7
Minnesota	--	129.4	13.6
Wisconsin	--	23.2	2.5

Michigan.--For the first time, Michigan production exceeded 2 million cords. Pulpwood production rose to 2.16 million cords, a gain of 23 percent from 1982 and 9 percent from the previous high in 1979. Demand for aspen and birch reached peak levels. Marquette, Iron, Delta, Menominee, and Baraga Counties were the leading producers.

Minnesota.--Minnesota's output of 1.91 million cords broke the old high in 1974 by 21 percent and surpassed 1982 by 29 percent. Aspen provided most of the gain, rising 526,000 cords (61 percent) from 1982. Demand for aspen was strong at flakeboard plants. Aspen dominated the harvest, accounting for 77 percent of all roundwood cut and 95 percent of all hardwood harvested. Demand for softwoods weakened, with pine and spruce production at all-time lows. Five counties--St. Louis, Itasca, Koochiching, Beltrami, and Cass--supplied 71 percent of the roundwood.

Wisconsin.--Wisconsin producers furnished 2.47 million cords of pulpwood, 8 percent more than in 1982 and 4 percent more than the record set in 1981. The aspen harvest exceeded 1 million cords for the first time. Birch production nudged above the high in 1980. Contrary to the general uptrend, pine output dropped 82,000 cords. Top-producing counties were Marinette, Bayfield, Oneida, Forest, Douglas, Vilas, Sawyer, Price, and Langlade.

In this report we show the distribution of the harvest in two ways: first, the amount of pulpwood cut relative to the growing stock volume in each of five major pulpwood species (fig. 1); and, second, the amount of pulpwood cut relative to commercial forest area (fig. 2). For the major supply areas, pulpwood harvesting was most intensive for jack pine in the

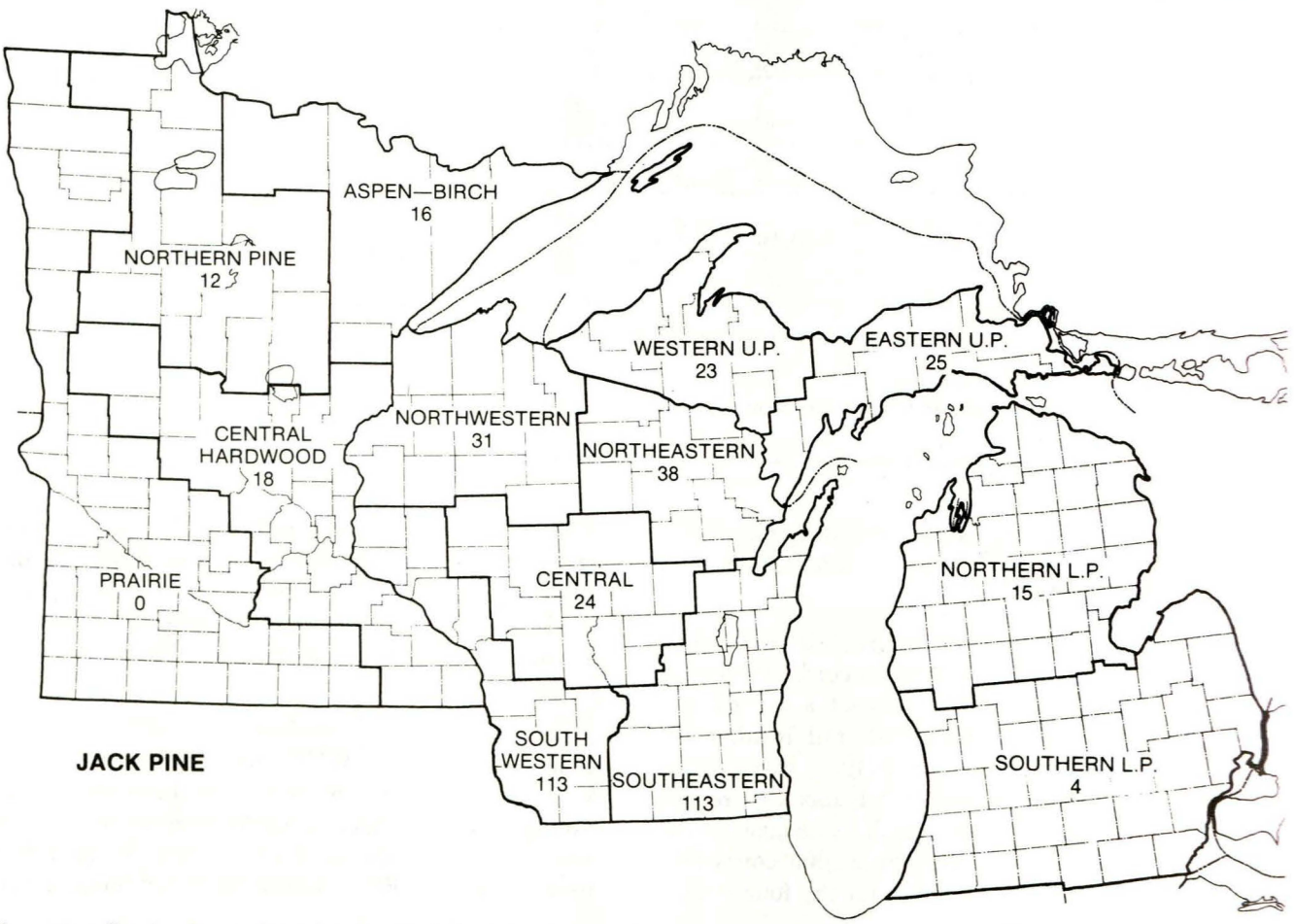
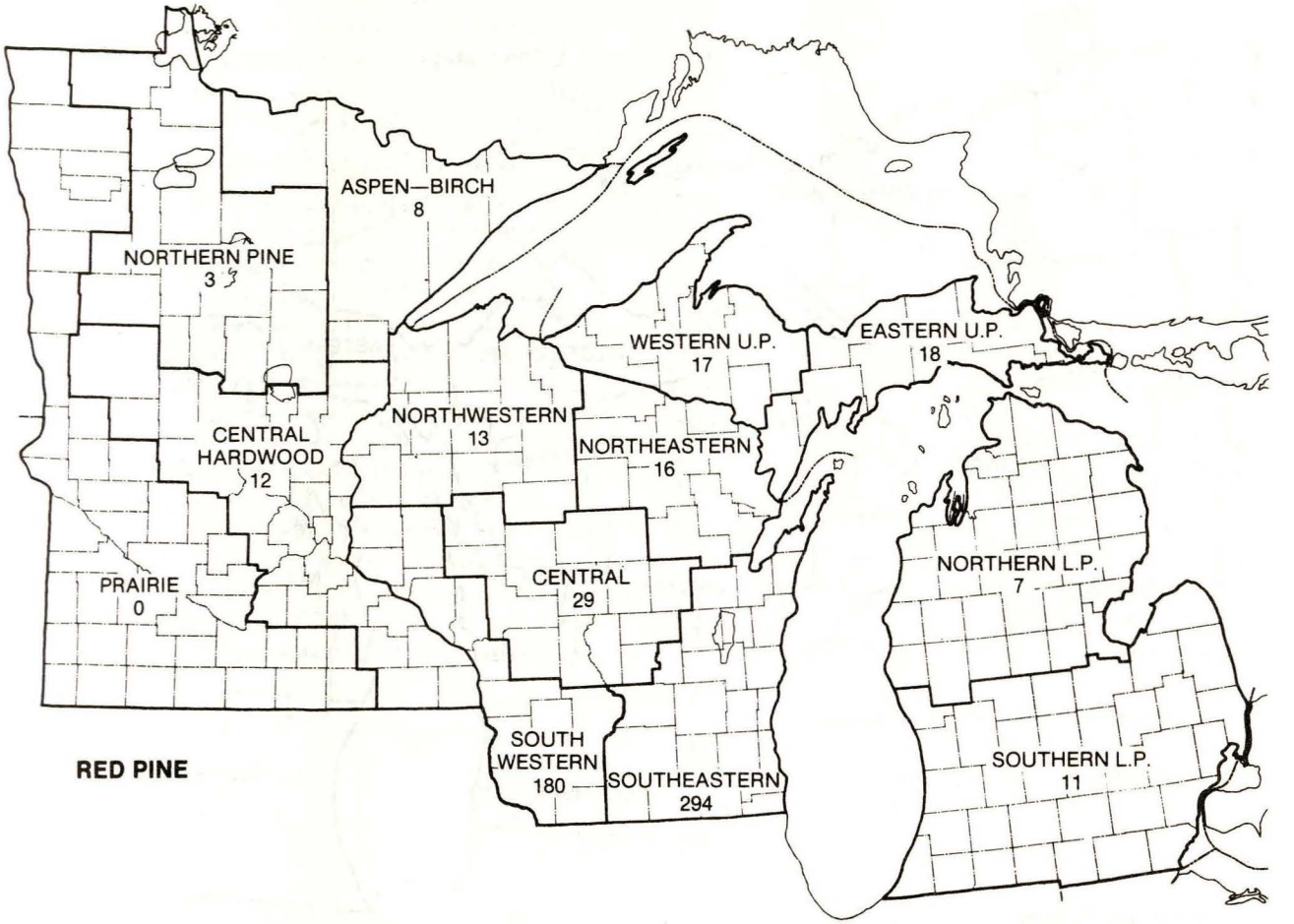


Figure 1.--*Cords of roundwood pulpwood (including chips from roundwood) harvested per 1,000 cords of merchantable volume in five principal pulpwood species by Forest Survey Unit, 1983. Merchantable volume was determined during the last forest inventory in each State.*

(Figure 1 continued)



Northeastern and Northwestern Wisconsin Survey Units; for red pine in the Central Unit of Wisconsin; for spruce in the Northern Pine Unit of Minnesota; for balsam fir in northeastern Wisconsin; and for aspen in northern Wisconsin, northern Minnesota, and the northern Lower Peninsula of Michigan.

Pulpwood harvesting was more than 200 cords per thousand acres of stocked commercial forest land in the following counties:

Michigan
Mason
Delta
Dickinson
Menominee
Iron

Minnesota
Itasca
Hubbard
Koochiching

Wisconsin
Vilas
Langlade
Marinette
Florence
Menominee
Forest
Oneida
Bayfield
Douglas
Price

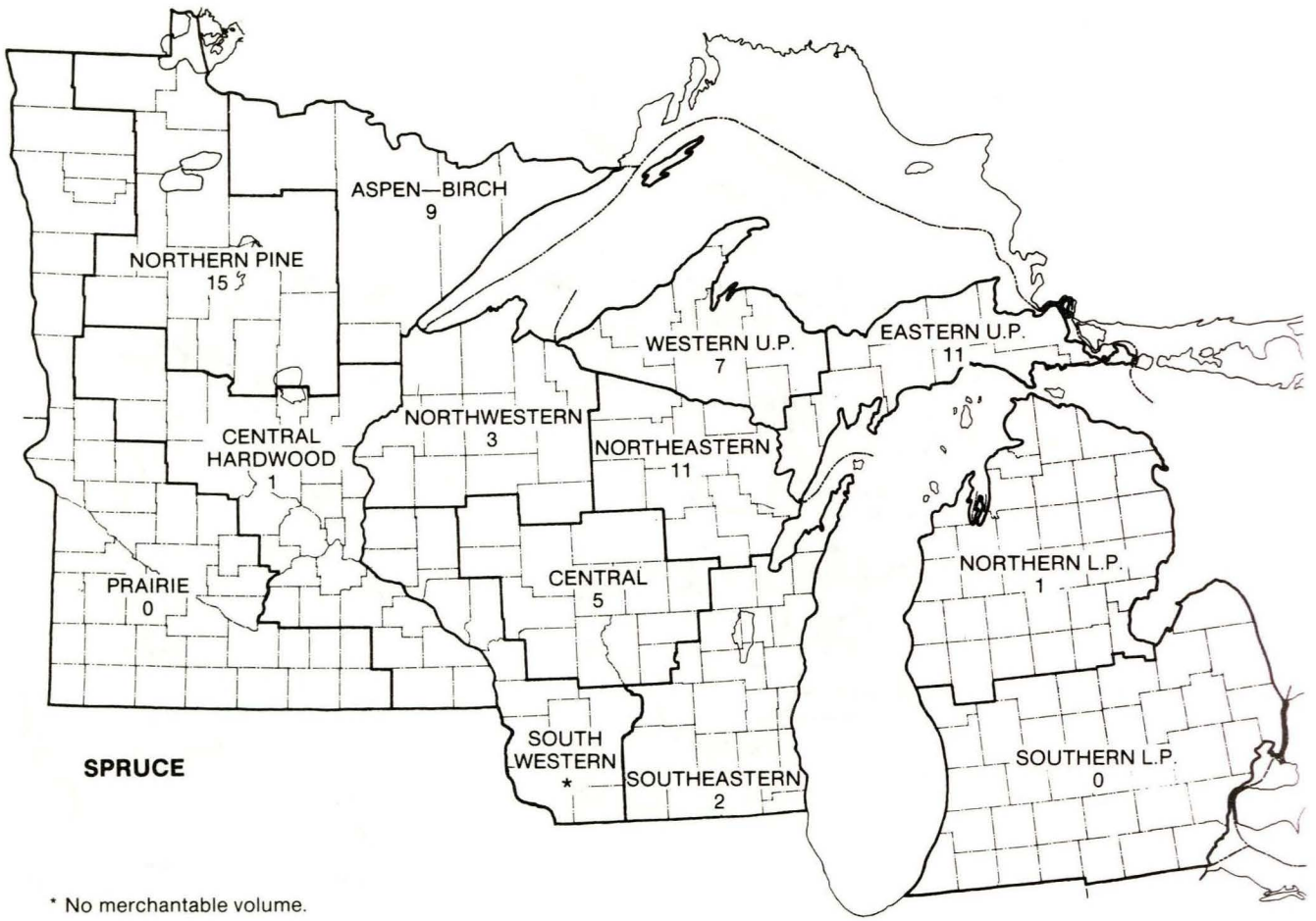
Receipts

Thirty-eight pulp, three particleboard, three waferboard, and three oriented-strand-board mills received 6.68 million cords of pulpwood in 1983, more than a million-cord increase from 1982. Forty-three of the 47 operating mills used aspen and 22 used birch (table 2).

Imports of Canadian softwood residue fell for the third consecutive year to slightly more than one-third of the peak imports set in 1980. After 3 declining years, softwood residue shipments to the Lake States from other areas of the U.S. increased, but, excluding 1982, remained lower than in any year since 1967; South Dakota and Wyoming were the principal suppliers.

Lake States mills have never imported hardwood roundwood in quantity from other States and Canada. These hardwood imports topped out in 1969 at 21,000 cords; none has been received in the Lake States since 1980.

(Figure 1 continued)



* No merchantable volume.

Michigan.--Out-of-State sources supplied only 2 percent of the 1.79 million cords received in Michigan. Hardwood mill residue was the chief import. Demand was highest for aspen, jack pine, soft maple, and white birch.

Wisconsin.--Twenty-three percent of the 3.11 million cords received at 25 Wisconsin mills came from out-of-State. Michigan furnished 391,000 cords, Minnesota 156,000 cords, other (primarily western) States 137,000 cords, and Canada 32,000 cords. Nearly three-fifths of the spruce and nearly four-fifths of the tamarack was imported. Wisconsin mills received 73 out of every 100 cords of softwood residue from Canada and States beyond the Lake States.

Minnesota.--Minnesota pulpwood receipts are not fully reported (see earlier explanation).

Industry Trends and Analysis

Pulpmills

Average daily pulp production remained unchanged from 10,770 tons per day in 1982 (table 3). Three pulp mills each had average daily production of 800 tons or more; six each averaged less than 100 tons. Average mill size has been increasing for more than a decade as smaller mills closed and larger mills expanded their capacity. In 1970, 10 mills each produced less than 100 tons daily, and only one mill had a daily capacity of

(Figure 1 continued)

* No merchantable volume.

800 tons or more. Six more pulp mills operated in 1970 than in 1983, but daily capacity was at least 11 percent lower during 1970 in the Lake States.

Lake States pulpwood production for pulpmills in 1981, 1982, and 1983 was:

Species	Production		
	1981	1982	1983
Roundwood	(Thousand cords)		
Aspen	2,037	1,828	2,133
Other species	2,568	2,621	2,618
Residue	496	384	445
Total	5,101	4,833	5,196

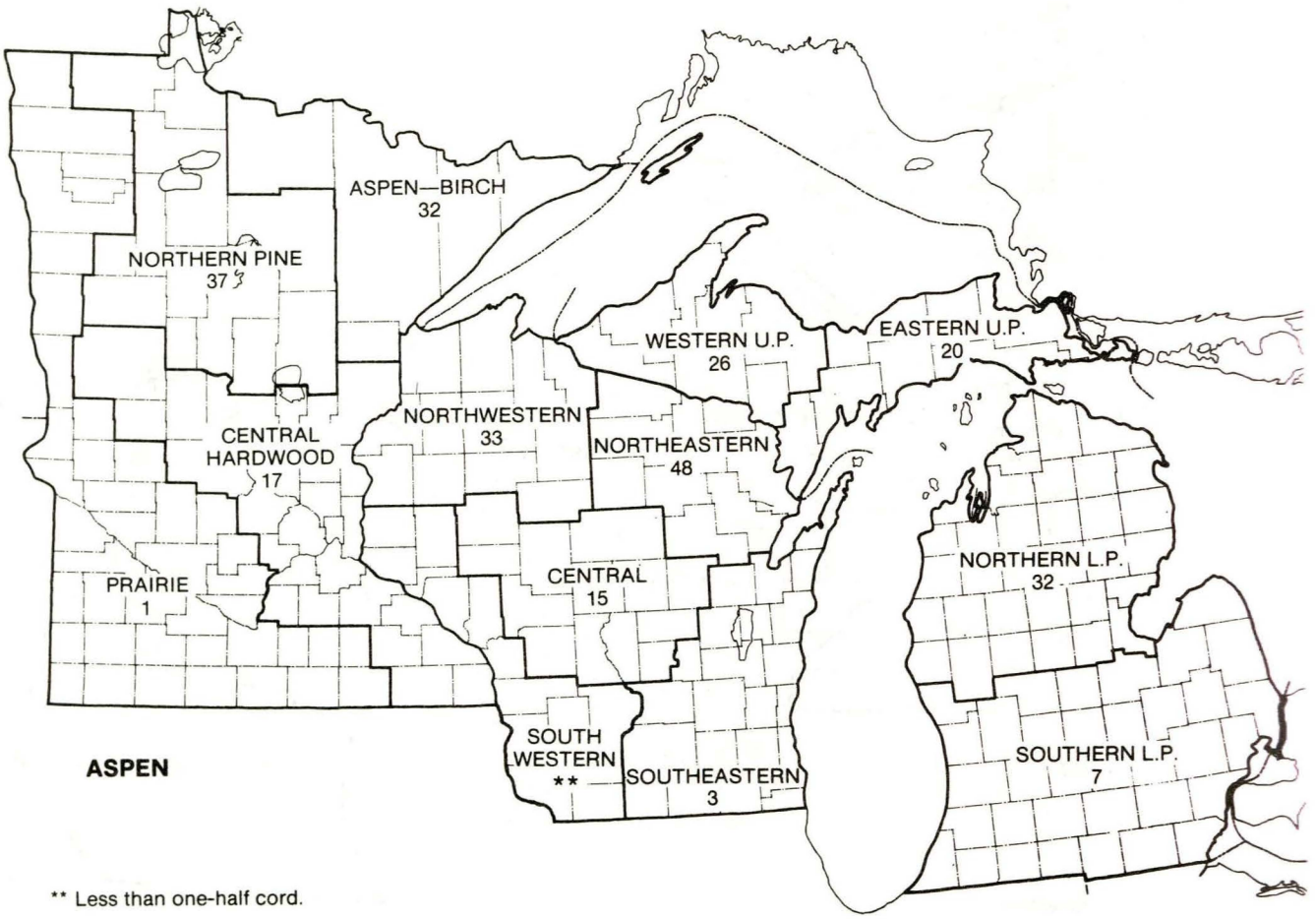
Pulpwood production destined for pulpmills rose 7.5 percent in the Lake States during 1983. This increase compares favorably with the 6.5 percent rise in U.S. woodpulp production in 1983.

Flakeboard mills

Minnesota's second oriented-strand-board (OSB) plant began operating in 1983. Annual production capacity of the Lake States flakeboard plants was 860 million square feet as shown below:

Company	Location	Capacity (Million square feet ¾-inch basis)
Champion International Corp.	Gaylord, MI	175
Weyerhaeuser Co.	Grayling, MI	105
Blandin Wood Products Co.	Grand Rapids, MN	135
Northwood Panelboard Co.	Bemidji, MN	80
Potlatch Corp.	Bemidji, MN	75
Potlatch Corp.	Cook, MN	80
Louisiana — Pacific	Hayward, WI	130
Rodman Industries	Marinette, WI	15
Weyerhaeuser Co.	Marshfield, WI	65
		860

(Figure 1 continued)



** Less than one-half cord.

Lake States pulpwood production for flakeboard plants in 1981, 1982, and 1983 was:

Species	Production		
	1981	1982	1983
Roundwood	(Thousand cords)		
Aspen	382	554	1,173
Other species	54	61	93
Residue	60	73	80
Total	496	688	1,346

Aspen continued to gain market share as the newer mills prefer aspen.

Pulpwood production for flakeboard nearly doubled because new plants were gearing up toward capacity and U.S. housing starts reached 1.7 million units, up 30 percent from the 36-year low set in 1982. New housing, including the furniture purchased for new homes, is a major consumer of flakeboard. Overall, furniture markets were strong in 1983.

During the next 2 years, massive increases in waferboard and OSB capacity are expected in the U.S. Two firms have major multi-plant programs.

Another waferboard plant is planned for Minnesota, and the first Lake States medium density fiberboard plant is planned for Michigan's Upper Peninsula. In addition, at least two pulpmills are increasing their capacity.

Demand for paper and paperboard in 1984 is high and demand for new housing is holding near the 1983 level. With these strong market forces nationally and new Lake States flakeboard plants able to operate closer to capacity, Lake States pulpwood output is likely to set another record in 1984.

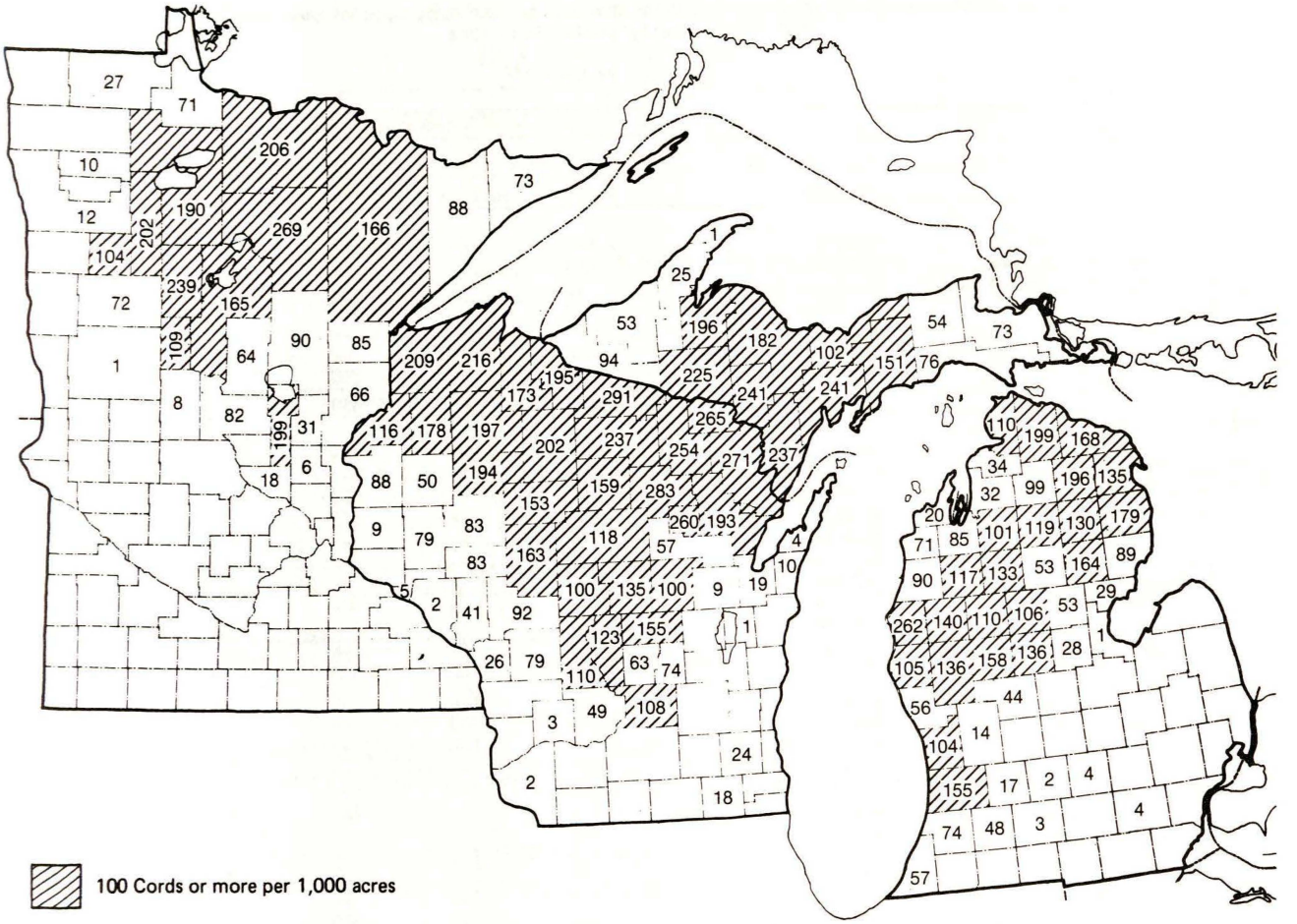


Figure 2.--*Cords of pulpwood cut per 1,000 acres of stocked commercial forest land in principal pulpwood-producing counties, 1983. Acres of stocked commercial forest land were determined during the last forest inventory in each State.*

Table 2.--Numbers of industrial plants in the Lake States using a particular species or residue for pulping and flakeboard in 1983

Species and kind of material	Total Lake States	Michigan	Minnesota	Wisconsin
Aspen	43	9	13	21
Balsam fir	17	3	5	9
Birch	22	7	2	13
Hemlock	8	1	-	7
Pine	11	5	2	4
Spruce	15	2	5	8
Tamarack	7	1	2	3
Maple	16	7	-	9
Oak	16	7	-	9
Other hardwoods	21	7	5	9
Softwood residue	12	2	2	8
Hardwood residue	20	7	2	11
Total plants[1/]	47	9	13	25

[1/] Some plants use more than one species, so numbers in columns are not additive.

Table 3.--Active woodpulp mills in the Lake States, by location, type of pulp produced, and average daily production, 1983

(In tons per 24 hours)[1/]

Company	Location	Average production				
		Total	Sulfite	Kraft	Groundwood and other mechanical	Semi-chemical
Michigan						
Abitibi-Price, Inc.	Alpena	430	--	--	430	--
Champion International	Ontonagon	440	--	--	--	440
Manistique Pulp and Paper Co.	Manistique	90	--	--	90	--
Mead Corp.	Escanaba	800	--	600	200	--
Menasha Corp.	Otsego	225	--	--	--	225
Packaging Corp. of America	Filer City	600	--	--	--	600
Warren Co., S.D.	Muskegon	250	--	250	--	--
Total	7 Mills	2,835	--	850	720	1,265
Minnesota						
Blandin Paper Co.	Grand Rapids	300	--	--	300	--
Hennepin Paper Co.	Little Falls	75	--	--	75	--
Boise Cascade Corp.	International Falls	920	--	380	540	--
Potlatch Corp.	Cloquet	475	--	475	--	--
Superwood Corp.	Bemidji	100	--	--	100	--
St. Regis Paper Co.	Sartell	385	--	--	385	--
Superwood Corp.	Duluth	350	--	--	350	--
Conwed Corp.	Cloquet	50	--	--	50	--
Certain-Teed Corp.	Shakopee	80	--	--	80	--
Total	9 Mills	2,735	--	855	1,880	--
Wisconsin						
James River Corp.	Green Bay	150	150	--	--	--
Weyerhaeuser Co.	Rothschild	200	200	--	--	--
Badger Paper Mills	Peshtigo	100	100	--	--	--
Appleton Papers Inc.	Combined Locks	200	--	--	200	--
Consolidated Papers, Inc.	Stevens Point	230	--	--	230	--
Consolidated Papers, Inc.	Wisconsin Rapids	750	--	450	300	--
Green Bay Packaging, Inc.	Green Bay	200	--	--	--	200
Flambeau Paper Co.	Park Falls	110	110	--	--	--
Midtec Paper Corp.	Kimberly	180	--	--	180	--
Pentair, Inc.	Niagara	210	--	--	210	--
Mosinee Paper Mills Co.	Mosinee	210	--	210	--	--
Nekoosa Papers, Inc.	Nekoosa	335	--	335	--	--
Nekoosa Papers, Inc.	Port Edwards	235	235	--	--	--
Owens-Illinois	Tomahawk	1,000	--	--	--	1,000
Procter and Gamble, Inc.	Green Bay	2/	2/	2/	2/	2/
Rhinelander Paper Co.	Rhinelander	75	75	--	--	--
Genstar Corp.	Cornell	100	--	--	100	--
Superior Fiber Products Co.	Superior	180	--	--	180	--
Thilmany Pulp and Paper Co.	Kaukauna	400	--	400	--	--
Tomahawk Pulp Co., Inc.	Tomahawk	50	--	--	50	--
Wausau Paper Mills Co.	Brokaw	185	185	--	--	--
Superwood Corp.	Phillips	100	--	--	100	--
Total	22 Mills	5,200	1,055	1,395	1,550	1,200
All states	38 Mills	10,770	1,055	3,100	4,150	2,465

1/ Lockwood's Directory of the Paper and Allied Industries -- 1984.
2/ Capacity not available.

CENTRAL STATES

Production

Pulpwood production climbed 26 percent to 448,000 cords (table 4), the highest output since 1979. About 7 out of 10 cords were residue from wood-using mills. Demand rose for roundwood in each species group and for Central States mill residue. For the fifth consecutive year, exports from the Central States (chiefly hardwood residue) reached a new high. Kentucky, Michigan, Wisconsin, and Ohio mills received 68 percent of the pulpwood produced.

Indiana, the leading producer, surpassed the previous peak output of 1979. Most of the gain came from hardwood residue, which accounted for more than four-fifths of Indiana's production. Output rose in the other Central States with Missouri having the largest increase. Illinois pulpwood production was the second lowest since 1959, and Iowa production was the second lowest since 1958.

Loggers harvested pulpwood in 21 Illinois counties, 19 Indiana counties, 18 Missouri counties, and 9 Iowa counties (fig. 3). Logging areas expanded in southeast

Table 4.--Production and imports of pulpwood, Central States, 1983

(In standard cords, unpeeled)[1/]

Species and destination	Production by States[2/]					Imports			Total receipts
	Illinois	Indiana	Iowa	Missouri	Regional total	Lake States	Other U.S.	Total imports	
Roundwood									
Softwoods									
Central States[3/]	302	--	--	--	302	--	--	--	302
Exported[4/]	17,899	--	--	1,384	19,283	--	--	--	--
Total	18,201	--	--	1,384	19,585	--	--	--	302
Soft hardwoods									
Central States[3/]	10,585	13,915	2,825	6,812	34,137	--	1,431	1,431	35,568
Exported[4/]	9,053	--	--	1,437	10,490	--	--	--	--
Total	19,638	13,915	2,825	8,249	44,627	--	1,431	1,431	35,568
Hard hardwoods									
Central States[3/]	4,377	13,842	4,684	8,807	31,710	--	1,424	1,424	33,134
Exported[4/]	14,806	13,302	--	13,275	41,383	--	--	--	--
Total	19,183	27,144	4,684	22,082	73,093	--	1,424	1,424	33,134
Total roundwood									
Central States[3/]	15,264	27,757	7,509	15,619	66,149	--	2,855	2,855	69,004
Exported[4/]	41,758	13,302	--	16,096	71,156	--	--	--	--
Total	57,022	41,059	7,509	31,715	137,305	--	2,855	2,855	69,004
Softwood residue									
Exported[4/]	3,395	--	5,562	2,237	11,194	--	--	--	--
Total	3,395	--	5,562	2,237	11,194	--	--	--	--
Hardwood residue									
Central States[3/]	15,779	34,061	3,420	23,446	76,706	--	2,438	2,438	79,144
Exported[4/]	14,730	151,051	--	56,543	222,324	--	--	--	--
Total	30,509	185,112	3,420	79,989	299,030	--	2,438	2,438	79,144
All wood material									
Central States[3/]	31,043	61,818	10,929	39,065	142,855	--	5,293	5,293	148,148
Exported[4/]	59,883	164,353	5,562	74,876	304,674	--	--	--	--
Total	90,926	226,171	16,491	113,941	447,529	--	5,293	5,293	148,148

[1/] Factors used in converting to standard green cords (128 cu. ft. including bark and air space) were:
4,500 pounds of soft hardwood roundwood;
5,000 pounds of hard hardwood or coniferous roundwood;
4,100 pounds of softwood chips (green);
4,400 pounds of hardwood chips (green);
2,500 pounds of chips (all species, dry).

[2/] Vertical columns of figures under box heading--Production by States--present the amount of pulpwood cut in each State.

[3/] Combined to prevent disclosure of individual mill receipts.

[4/] Pulpwood shipped to mills outside the region.

Iowa and west central Illinois and contracted in southwestern Indiana.

Receipts

Three Central States pulpmills received 148,000 cords compared to 106,000 cords in 1982. Despite the good recovery, receipts were the second lowest since 1958. Both roundwood and residue from wood-using mills contributed to the increase. Imports were only 5,000 cords.

Industry Trends and Analysis

Average daily pulp production remained at 470 tons (table 5). Most of the mills that closed during the last 6 years depended on some segment of the housing industry (including maintenance and repairs) for their finished products. Now only one of three active mills is dependent on housing. The other two produce corrugating medium, and their markets fluctuate more with general economic conditions.

In 1983, exports to other States climbed above 300,000 cords for the first time. Mills adjacent to the Central States are likely to continue procuring more than 3 out of every 5 cords of Central States pulpwood.

Except for the recessionary year 1982, pulpwood production has been more than 400,000 cords annually since 1969. As pulpmills closed in the Central States, mills in nearby States procured more Central States pulpwood. As a result, pulpwood production remained relatively steady during the last decade.

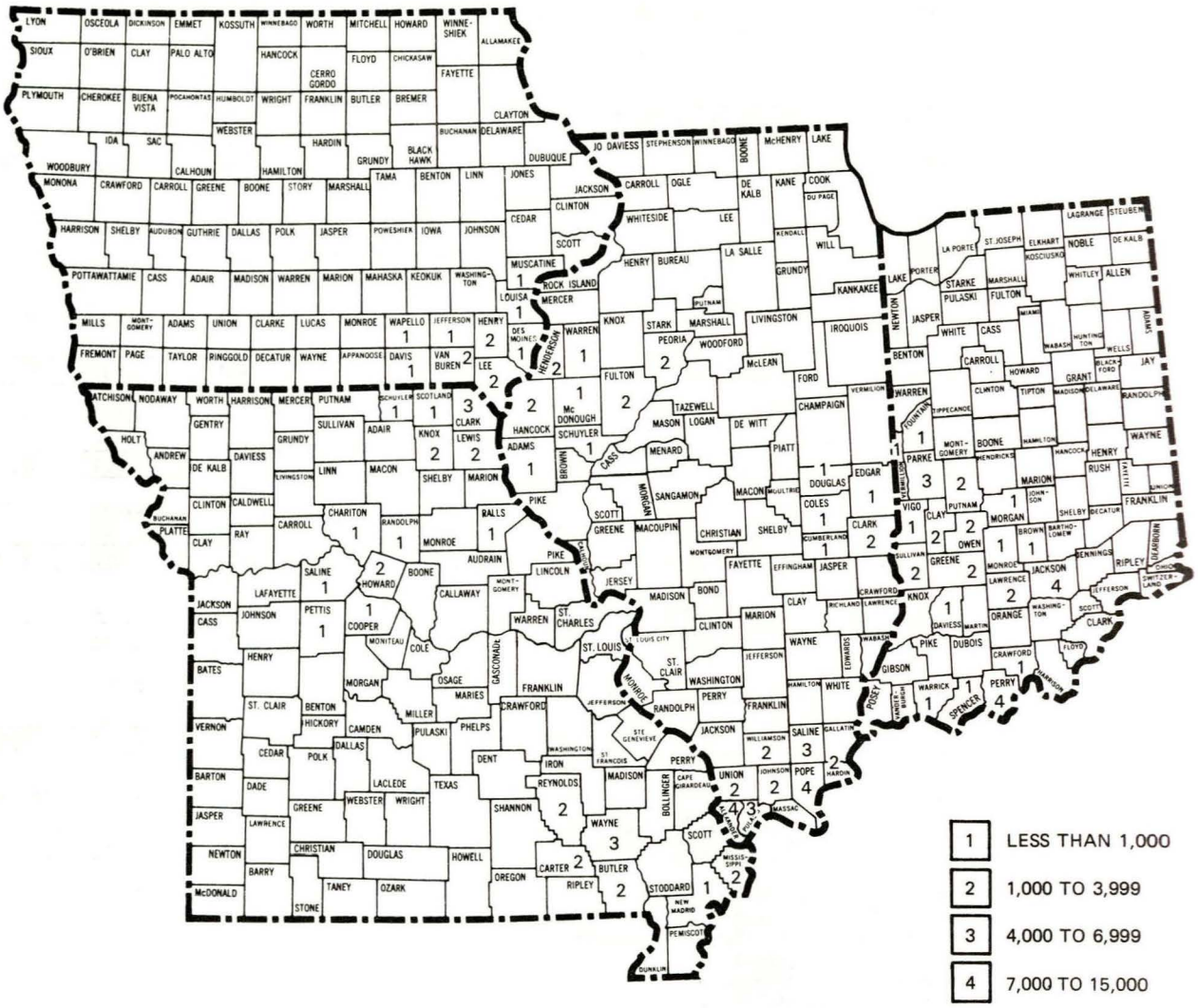


Figure 3.--*Production of pulpwood from roundwood (including chips from roundwood) in the Central States by counties, in standard cords, 1983.*

Table 5.--Active woodpulp mills in the Central States, by location, type of pulp produced, and average daily production, 1983

(In tons per 24 hours)[1/]

Company	Location	Average production				
		Total	Sulfite	Kraft	Groundwood and other mechanical	Semi-chemical
Illinois						
(no current operations)						
Total	0 Mills	--	--	--	--	--
Indiana						
Weston Paper and Mfg. Co.	Terre Haute	270	--	--	--	270
Total	1 Mill	270	--	--	--	270
Iowa						
Consolidated Packaging Corp.	Fort Madison	140	--	--	--	140
Total	1 Mill	140	--	--	--	140
Missouri						
Huebert Fibreboard, Inc.	Booneville	60	--	--	60	--
Total	1 Mill	60	--	--	60	--
All states	3 Mills	470	--	--	60	410

[1/] Lockwood's Directory of the Paper and Allied Industries -- 1984.

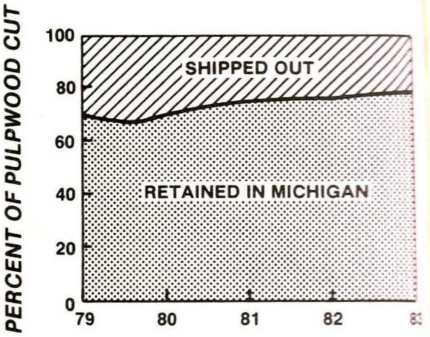
APPENDIX

Table 6.--Lake States pulpwood production by State of origin and destination, 1979-1983

(In thousand standard cords, unpeeled)

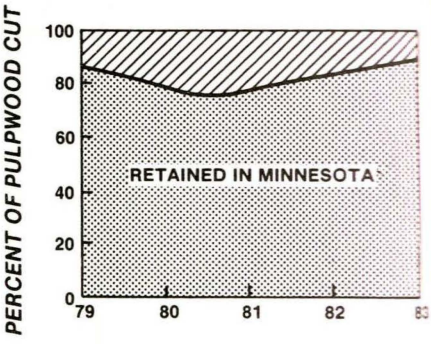
MICHIGAN

	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1979	1,981	1/	516	1,428	37
1980	1,969	-	490	1,443	36
1981	1,838	-	419	1,402	17
1982	1,751	-	396	1,340	15
1983	2,157	-	391	1,747	19
5-year average	1,939	1/	442	1,472	25



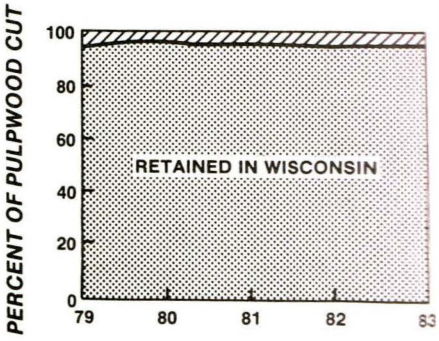
MINNESOTA

	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1979	1,458	1,226	169	-	63
1980	1,333	1,044	216	-	73
1981	1,371	1,119	177	-	75
1982	1,484	1,264	179	-	41
1983	1,910	1,720	155	-	35
5-year average	1,511	1,275	179	-	57



WISCONSIN

	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1979	2,109	20	2,024	47	18
1980	2,362	18	2,297	35	12
1981	2,389	34	2,320	26	9
1982	2,286	27	2,231	28	-
1983	2,475	53	2,399	23	-
5-year average	2,324	30	2,254	32	9



1/ Less than 500 cords.

Table 7.--Lake States pulpwood production by Forest Survey Unit and destination by State, 1983

(In hundred standard cords, unpeeled)

Unit	Total cut	Destination of pulpwood			
		Michigan	Minnesota	Wisconsin	Other
MICHIGAN					
Roundwood					
E. Upper Peninsula	5,000	3,991	--	870	139
W. Upper Peninsula	6,196	3,657	--	2,538	1
N. Lower Peninsula	8,017	7,882	--	82	53
S. Lower Peninsula	632	632	--	--	--
Total	19,845	16,162	--	3,490	193
Residue	1,731	1,309	--	422	--
Total pulpwood	21,576	17,471	--	3,912	193
MINNESOTA					
Roundwood					
Aspen-Birch	8,026	--	7,042	659	325
Northern Pine	9,421	--	8,687	734	--
Central Hardwood	702	--	630	72	--
Prairie	11	--	8	3	--
Total	18,160	--	16,367	1,468	325
Residue	939	--	830	88	21
Total pulpwood	19,099	--	17,197	1,556	346
WISCONSIN					
Roundwood					
Northeastern	9,511	28	--	9,483	--
Northwestern	9,252	31	530	8,691	--
Central	2,994	--	--	2,994	--
Southwestern	262	--	--	262	--
Southeastern	142	--	--	142	--
Total	22,161	59	530	21,572	--
Residue	2,584	168	--	2,416	--
Total pulpwood	24,745	227	530	23,988	--

Table 8.--Lake States pulpwood production[1/] from roundwood by species, State, and Forest Survey Unit, 1979-1983.

(In thousand standard cords, unpeeled)

MICHIGAN

Unit	Aspen					Balsam fir					Pine					Spruce				
	Annual production					Annual production					Annual production					Annual production				
	1979	1980	1981	1982	1983	1979	1980	1981	1982	1983	1979	1980	1981	1982	1983	1979	1980	1981	1982	1983
Eastern Upper Peninsula	125	116	89	93	109	43	57	57	56	59	119	70	56	77	95	21	34	24	33	45
Western Upper Peninsula	204	209	201	210	242	41	46	42	45	36	48	53	45	52	52	17	23	19	34	31
Northern Lower Peninsula	375	374	350	315	523	1	6	5	4	6	166	124	118	118	102	1	1	2	1	1
Southern Lower Peninsula	5	6	12	14	15	--	--	--	--	--	17	21	18	15	8	--	--	--	--	--
Total	709	705	652	632	889	85	109	104	105	101	350	268	237	262	257	39	58	45	68	77

MINNESOTA

Aspen-Birch	392	313	352	308	563	72	73	69	68	51	75	66	71	92	68	119	127	93	98	66
Northern Pine	404	357	422	504	766	46	38	31	38	39	75	76	70	80	67	34	43	34	36	29
Central Hardwood	41	29	27	54	62	(1/)	--	--	(1/)	--	8	9	6	7	5	(1/)	(1/)	(1/)	--	(1/)
Prairie	1	(1/)	(1/)	--	1	--	--	--	--	--	--	--	(1/)	(1/)	--	--	(1/)	(1/)	--	--
Total	838	699	801	866	1,392	118	111	100	106	90	158	151	147	179	140	153	170	127	134	95

WISCONSIN

Northeastern	364	459	415	392	451	60	66	79	70	61	95	95	111	156	114	14	27	22	23	21
Northwestern	319	326	469	420	481	23	35	25	32	22	113	113	131	141	125	4	5	5	5	7
Central	66	85	79	71	91	1	1	1	1	2	127	149	150	166	137	(1/)	1	(1/)	(1/)	(1/)
Southwestern	1	1	1	(1/)	(1/)	--	--	(1/)	(1/)	--	20	22	20	23	25	--	(1/)	(1/)	(1/)	(1/)
Southeastern	1	2	1	1	2	--	--	--	(1/)	--	6	8	7	8	11	1	(1/)	--	--	(1/)
Total	751	873	965	884	1,025	84	102	105	103	85	361	387	419	494	412	19	33	27	28	28
Lake States	2,298	2,277	2,418	2,382	3,306	287	322	309	314	276	869	806	803	935	809	211	261	199	230	200

1/ Less than 500 cords.

2/ Includes small quantity of cedar not shown in other parts of table.

(Table 8 continued)

MICHIGAN

Unit	Tamarack					Other hardwoods				
	Annual production					Annual production				
	1979	1980	1981	1982	1983	1979	1980	1981	1982	1983
Eastern Upper Peninsula	1	3	3	3	4	83	124	119	97	106
Western Upper Peninsula	1	3	3	7	3	174	163	143	135	161
Northern Lower Peninsula	--	--	--	--	--	194	206	194	128	144
Southern Lower Peninsula	--	--	--	--	--	5	8	17	36	40
Total	2	6	6	10	7	456	501	473	396	451

MICHIGAN

Unit	Birch					Hemlock				
	Annual production					Annual production				
	1979	1980	1981	1982	1983	1979	1980	1981	1982	1983
Eastern Upper Peninsula	35	29	36	31	40	26	32	23	30	27
Western Upper Peninsula	53	40	44	38	64	19	26	16	26	21
Northern Lower Peninsula	21	34	25	19	26	--	(1/)	(1/)	(1/)	--
Southern Lower Peninsula	(1/)	(1/)	(1/)	1	(1/)	--	--	--	--	--
Total	109	103	105	89	130	45	58	39	56	48

MINNESOTA

Aspen-Birch	18	22	11	24	12	18	30	31	27	40
Northern Pine	16	18	18	20	14	9	16	19	28	26
Central Hardwood	(1/)	(1/)	(1/)	(1/)	(1/)	4	2	3	4	3
Prairie	2	3	1	(1/)	(1/)	--	(1/)	--	--	--
Total	36	43	30	44	26	31	48	53	59	69

MINNESOTA

Aspen-Birch	3	11	9	1	3	--	--	--	--	--
Northern Pine	1	4	2	2	1	--	--	--	--	--
Central Hardwood	3	(1/)	(1/)	(1/)	(1/)	--	--	--	--	--
Prairie	--	--	--	--	--	--	--	--	--	--
Total	7	15	11	3	4	--	--	--	--	--

WISCONSIN

Northeastern	1	2	1	2	2	150	181	154	134	190
Northwestern	1	1	3	4	3	165	186	160	152	175
Central	(1/)	(1/)	1	1	1	121	82	70	53	56
Southwestern	--	--	--	(1/)	--	4	4	3	(1/)	(1/)
Southeastern	--	--	--	--	--	1	2	2	1	1
Total	2	3	5	7	6	441	455	389	340	422

WISCONSIN

Northeastern	76	91	74	69	83	26	26	24	29	29
Northwestern	63	80	73	74	103	13	6	4	4	9
Central	11	15	12	11	12	1	2	1	(1/)	2
Southwestern	(1/)	(1/)	(1/)	(1/)	(1/)	--	--	--	--	--
Southeastern	1	(1/)	(1/)	(1/)	(1/)	--	--	--	--	--
Total	151	186	159	154	198	40	34	29	33	40

Lake States	40	52	41	61	39	928	1,004	915	795	942

Lake States	267	304	275	246	332

Lake States	85	92	68	89	88

(Table 8 continued on next page)

(Table 8 continued)

Unit	All species2/ Annual production				
	1979	1980	1981	1982	1983
MICHIGAN					
Eastern Upper Peninsula	457	469	414	425	500
Western Upper Peninsula	561	566	517	554	619
Northern Lower Peninsula	759	745	693	585	802
Southern Lower Peninsula	27	35	48	66	63
Total	1,804	1,815	1,672	1,630	1,984
MINNESOTA					
Aspen-Birch	696	642	635	618	803
Northern Pine	585	552	597	708	942
Central Hardwood	56	40	36	65	70
Prairie	3	3	2	(1/)	1
Total	1,340	1,237	1,270	1,391	1,816
WISCONSIN					
Northeastern	786	947	880	875	951
Northwestern	701	752	870	832	925
Central	327	335	315	303	300
Southwestern	25	27	24	23	26
Southeastern	10	12	9	10	14
Total	1,849	2,073	2,098	2,043	2,216
Lake States	4,993	5,125	5,040	5,064	6,016

Table 9.--Lake States pulpwood production from roundwood by county and species group, 1983

(In standard cords, unpeeled)

MICHIGAN

Unit and County[1/]	All species	Species group										
		Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
E. Upper Peninsula												
Alger	49,477	1,098	3,968	4,744	3,685	2,599	943	3,403	187	254	9,338	2,498
Chippewa	51,295	1,420	3,936	1,762	13,325	4,462	993	4,300	188	144	11,982	901
Delta	138,357	4,791	18,560	4,995	11,954	12,800	2,908	13,046	1,926	578	25,726	6,115
Luce	25,039	465	3,815	2,754	4,109	537	265	4,957	385	65	2,620	633
Mackinac	39,310	772	5,202	1,191	1,268	1,569	451	3,994	120	197	12,258	1,196
Menominee	116,384	2,683	16,930	7,854	2,839	2,027	1,703	9,355	660	685	36,862	6,284
Schoolcraft	80,061	2,593	6,665	4,163	17,045	7,596	1,773	6,183	281	295	10,430	2,848
Total	499,923	13,822	59,076	27,463	54,225	31,590	9,036	45,238	3,747	2,218	109,216	20,475
W. Upper Peninsula												
Baraga	100,118	1,972	1,968	6,445	4,387	291	479	1,708	173	195	46,658	--
Dickinson	90,206	1,096	7,527	1,677	1,845	2,221	591	5,163	851	286	46,815	4,454
Gogebic	57,943	7	190	1,259	96	3,013	5	429	1	704	26,833	--
Houghton	12,492	36	367	323	1,992	446	18	277	7	412	1,460	--
Iron	146,953	1,116	9,124	2,543	2,034	1,607	933	8,470	980	555	65,975	--
Keweenaw	152	--	23	66	--	--	--	27	--	--	--	--
Marquette	175,938	5,530	17,170	7,677	19,499	8,399	3,884	14,737	978	675	38,110	8,814
Ontonagon	35,769	--	103	986	--	22	--	596	110	156	15,972	--
Total	619,571	9,757	36,472	20,976	29,853	15,999	5,910	31,407	3,100	2,983	241,823	13,268
N. Lower Peninsula												
Alcona	54,307	--	20	--	643	435	18	--	--	572	38,859	1,496
Alpena	28,308	--	83	--	380	12	--	10	--	415	20,702	1,001
Antrim	4,866	--	--	--	252	252	10	--	--	5	3,435	--
Arenac	2,699	--	--	--	--	--	--	--	--	67	1,954	4
Bay	21	--	--	--	--	--	--	--	--	--	21	--
Benzie	8,572	--	--	--	--	--	--	--	--	104	4,005	--
Charlevoix	4,652	--	--	--	12	12	--	--	--	78	3,415	19
Cheboygan	72,304	--	1,188	--	2,263	270	--	291	--	401	51,275	499
Clare	22,861	--	--	--	732	--	--	--	--	3	21,389	--
Crawford	32,571	--	20	--	5,712	2,539	103	1	--	36	19,002	81
Emmet	21,437	--	--	--	73	1,584	--	--	--	14	16,721	14
Gladwin	10,058	--	--	--	22	--	--	--	--	55	9,093	--
Grand Traverse	12,984	--	--	--	589	589	25	--	--	104	9,510	--
Iosco	20,109	--	33	--	5,142	3,042	100	--	--	60	8,271	304
Isabella	10,188	--	--	--	-	--	--	--	--	52	9,399	--
Kalkaska	24,728	--	--	--	4,244	3,698	151	--	--	140	13,171	--
Lake	41,920	--	--	--	3,945	3,945	162	--	--	478	21,597	--
Leelanau	1,499	--	--	--	5	5	--	--	--	--	1,281	--
Manistee	19,573	--	--	--	--	1,103	--	--	--	218	8,319	--
Mason	38,195	--	--	--	--	1,278	--	--	--	195	25,973	--
Mecosta	18,926	--	--	--	--	349	--	--	--	19	16,459	--
Midland	4,112	--	--	--	--	--	--	--	--	42	3,810	--
Missaukee	27,071	--	--	--	204	204	8	--	--	136	22,599	4
Montmorency	56,787	--	1,637	--	2,687	245	11	--	--	962	38,963	883
Newaygo	42,145	--	--	--	5,963	5,963	243	--	--	41	23,621	--
Oceana	15,065	--	--	--	658	1,534	--	--	--	21	9,767	--
Ogemaw	35,734	--	--	--	6,375	3,928	160	--	--	175	18,473	185
Osceola	17,332	--	--	--	--	94	--	--	--	9	14,553	--
Oscoda	39,785	--	--	--	5,926	3,800	145	--	--	151	24,016	406
Otsego	25,838	--	--	--	9,541	1,410	54	--	--	107	9,650	87
Presque Isle	44,882	--	2,773	--	3,637	--	--	685	--	393	28,036	827
Roscommon	13,119	--	--	--	821	522	21	--	--	14	10,222	52
Wexford	29,102	--	--	--	2,180	2,180	89	--	--	127	15,827	1
Total	801,750	--	5,754	--	62,006	38,993	1,300	987	--	5,194	523,388	5,863
S. Lower Peninsula												
Allegan	21,207	--	--	--	367	367	16	--	--	407	4,343	--
Barry	1,859	--	--	--	--	138	--	--	--	8	1,143	--
Berrien	3,742	--	--	--	--	--	--	--	--	31	493	--
Calhoun	214	--	--	--	--	192	--	--	--	--	7	--
Eaton	73	--	--	--	--	73	--	--	--	--	--	--
Ingham	176	--	--	--	--	31	--	--	--	--	145	--
Kalamazoo	3,198	--	--	--	--	15	--	--	--	35	543	--
Kent	1,748	--	--	--	--	306	--	--	--	13	449	--
Montcalm	6,150	--	--	--	--	120	--	--	--	31	3,059	--
Muskegon	8,939	--	--	--	358	1431	--	--	--	38	2,241	--
Ottawa	8,081	--	--	--	--	4206	--	--	--	21	957	--
Van Buren	7,533	--	--	--	--	--	--	--	--	74	1,172	--
Washtenaw	247	--	--	--	--	--	--	--	--	--	--	--
Total	63,167	--	--	--	725	6,879	16	--	--	658	14,552	--
State total	1,984,411	23,579	101,302	48,439	146,809	93,461	16,262	77,632	6,847	11,053	888,979	39,606

(Table 9 continued on next page)

(Table 9 continued)

MICHIGAN

Unit and County[1/]	Species group											
	Basswood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwoods
E. Upper Peninsula												
Alger	1,031	1,707	3,157	1,730	--	1,468	--	3,675	3,309	298	18	367
Chippewa	466	824	1,665	751	--	417	--	1,866	1,734	75	--	84
Delta	2,513	3,361	7,260	4,293	--	2,434	--	6,782	7,721	97	32	465
Luce	312	432	854	533	--	479	--	823	889	53	--	59
Mackinac	617	1,110	1,929	994	--	883	--	2,539	2,811	99	--	110
Menominee	1,849	2,167	8,122	2,749	--	843	--	7,186	4,465	574	90	457
Schoolcraft	1,424	1,941	3,871	2,384	--	2,185	--	3,726	4,335	44	15	264
Total	8,212	11,542	26,858	13,434	--	8,709	--	26,597	25,264	1,240	155	1,806
W. Upper Peninsula												
Baraga	770	--	15,805	2,833	--	4,083	--	7,878	3,946	162	8	357
Dickinson	1,249	--	7,797	727	--	1,011	--	2,719	3,701	177	8	291
Gogebic	2,249	--	925	3,166	--	4,401	--	13,394	673	351	9	238
Houghton	60	--	787	719	--	1,952	--	2,885	674	58	--	19
Iron	583	--	6,222	5,291	--	11,714	--	20,050	8,350	364	78	964
Keweenaw	--	--	--	--	--	--	--	10	16	10	--	--
Marquette	3,350	4,300	11,266	5,297	--	4,972	--	9,837	9,861	730	34	818
Ontonagon	1,861	--	623	1,860	--	2,397	--	5,945	4,894	140	-	104
Total	10,122	4,300	43,425	19,893	--	30,530	--	62,718	32,115	1,992	137	2,791
N. Lower Peninsula												
Alcona	56	86	2,525	--	--	--	--	144	2,796	6,042	615	--
Alpena	39	52	1,659	--	--	--	--	151	1,677	1,906	219	2
Antrim	104	--	5	--	--	--	--	7	326	416	54	--
Arenac	--	--	121	--	--	--	--	32	380	140	1	--
Bay	--	--	--	--	--	--	--	--	--	--	--	--
Benzie	52	52	168	--	--	--	--	520	2,080	1,040	520	31
Charlevoix	8	11	433	--	--	--	--	47	573	44	--	--
Cheboygan	101	99	4,275	10	--	--	--	87	7,627	3,910	7	1
Clare	--	--	272	--	--	--	--	4	127	282	52	--
Crawford	53	114	860	--	--	--	--	4	1,832	1,676	501	37
Emmet	--	3	181	--	--	--	--	717	1,929	201	--	--
Gladwin	--	--	312	--	52	--	--	3	252	199	70	--
Grand Traverse	104	104	104	--	--	--	--	104	832	728	104	87
Iosco	6	8	580	--	--	--	--	16	654	1,708	185	--
Isabella	--	--	165	--	--	--	--	6	293	225	48	--
Kalkaska	208	124	632	65	--	--	--	78	1,405	620	83	109
Lake	208	208	483	--	--	--	--	577	3,698	4,429	1,878	312
Leelanau	--	41	63	--	--	--	--	52	52	--	--	--
Manistee	208	224	375	--	--	--	--	266	2,179	4,307	2,174	200
Mason	436	168	1,109	--	--	--	--	373	3,870	3,534	1,117	142
Mecosta	--	--	165	--	--	--	--	27	756	955	196	--
Midland	--	--	104	--	126	--	--	--	14	13	3	--
Missaukee	108	111	629	--	--	--	--	363	2,164	451	41	49
Montmorency	488	313	1,883	--	--	--	--	90	4,211	3,887	427	100
Newaygo	33	--	133	--	--	--	--	96	974	3,296	1,782	--
Oceana	--	--	280	--	--	--	--	48	994	1,304	459	--
Ogemaw	38	45	1,215	--	52	--	--	68	2,040	2,675	305	--
Osceola	--	--	253	--	--	--	--	222	680	1,020	501	--
Oscoda	29	27	1,025	2	--	--	--	24	1,333	2,514	363	24
Otsego	251	157	979	38	--	--	--	2	1,991	1,496	26	49
Presque Isle	40	59	3,262	--	--	--	--	98	3,244	1,646	182	--
Roscommon	1	1	408	1	--	--	--	52	446	297	234	27
Wexford	109	118	846	4	--	--	--	712	4,649	1,546	592	122
Total	2,680	2,125	25,504	120	230	--	--	4,990	56,078	52,507	12,739	1,292
S. Lower Peninsula												
Allegan	213	178	195	--	985	197	355	359	4,185	4,579	4,461	--
Barry	4	3	7	--	--	4	6	12	100	296	138	--
Berrien	33	27	30	--	366	31	54	54	1,053	785	785	--
Calhoun	--	--	--	--	--	--	--	1	2	10	2	--
Eaton	--	--	--	--	--	--	--	--	--	--	--	--
Ingham	--	--	--	--	--	--	--	--	--	--	--	--
Kalamazoo	36	30	33	--	168	34	61	61	671	755	756	--
Kent	14	12	13	--	--	--	--	--	316	341	284	--
Montcalm	--	--	31	--	--	--	--	41	450	1,779	639	--
Muskegon	--	--	38	--	--	--	--	50	533	2,914	1,336	--
Ottawa	8	7	20	--	--	8	14	31	406	895	457	1,051
Van Buren	78	65	70	--	362	72	130	130	2,614	1302	1,302	162
Washtenaw	--	--	--	--	--	--	--	--	--	--	--	247
Total	386	322	437	--	1,881	346	620	739	10,330	13,656	10,160	1,460
State total	21,400	18,289	96,224	33,447	2,111	39,585	620	95,044	123,787	69,395	23,191	7,349

(Table 9 continued on next page)

(Table 9 continued)

MINNESOTA

Unit and County[1/]	All species	Species group: Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
Aspen-Birch												
Carlton	26,321	--	194	--	1,029	655	187	564	--	--	21,700	1,808
Cook	38,882	--	2,597	--	1,575	108	194	7,751	--	--	26,657	--
Koochiching	260,741	--	17,758	--	11,689	4,171	2,399	24,018	9,328	--	175,929	14,853
Lake	74,523	--	5,297	--	1,553	1,237	1,969	13,521	1,614	--	47,514	767
St. Louis	402,058	--	24,827	--	26,383	8,124	7,190	20,071	842	55	291,071	21,878
Total	802,525	--	50,673	--	42,229	14,295	11,939	65,925	11,784	55	562,871	39,306
Northern Pine												
Aitkin	60,278	--	751	--	129	82	23	508	1,418	--	52,345	5,022
Becker	22,756	--	--	--	1,610	182	54	--	--	--	19,575	1,335
Beltrami	147,880	--	6,386	--	5,396	1,144	229	6,348	5,111	176	118,619	3,756
Cass	140,988	--	2,397	--	12,206	1,922	240	844	1,239	64	118,862	2,821
Clearwater	60,696	--	806	--	1,294	364	69	1,375	1,005	--	54,016	1,669
Crow Wing	23,484	--	--	--	5,180	560	--	--	--	--	17,744	--
Hubbard	95,304	--	347	--	4,035	694	229	296	165	--	86,033	3,505
Itasca	338,405	--	28,300	--	8,100	2,875	985	10,797	2,447	21	278,657	6,150
Lake of the Woods	24,388	--	415	--	10,500	--	--	6,797	1,517	--	4,952	207
Mahnomen	11,060	--	--	--	--	--	--	--	240	--	10,654	166
Roseau	5,098	--	90	--	1,475	--	--	1,988	548	--	891	106
Wadena	11,710	--	--	--	6,600	925	160	--	--	--	3,942	83
Total	942,047	--	39,492	--	56,525	8,748	1,989	28,953	13,690	261	766,290	24,820
Central Harwood												
Isanti	255	--	--	--	--	255	--	--	--	--	--	--
Kanabec	3,997	--	--	--	--	--	--	--	--	--	3,997	--
Mille Lacs	24,052	--	--	--	167	19	--	--	30	--	23,836	--
Morrison	12,020	--	--	--	167	19	--	26	--	--	11,808	--
Otter Tail	204	--	--	--	--	--	--	--	204	--	--	--
Pine	27,832	--	--	--	1,569	1,081	296	--	85	--	21,293	3,414
Sherburne	985	--	--	--	179	755	1	50	--	--	--	--
Todd	825	--	--	--	167	19	--	--	--	--	639	--
Winona	12	--	--	--	--	12	--	--	--	--	--	--
Total	70,182	--	--	--	2,249	2,160	297	76	319	--	61,573	3,414
Prairie												
Pennington	312	--	--	--	--	--	--	--	--	--	312	--
Polk	787	--	--	--	--	--	--	--	267	--	520	--
Total	1,099	--	--	--	--	--	--	--	267	--	832	--
State total	1,815,853	--	90,165	--	101,003	25,203	14,225	94,954	26,060	316	1,391,566	67,540

(Table 9 continued on next page)

(Table 9 continued)

MINNESOTA

Unit and County[1/]	Species group											
	Basswood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwoods
Aspen-Birch												
Carlton	--	--	184	--	--	--	--	--	--	--	--	--
Cook	--	--	--	--	--	--	--	--	--	--	--	--
Koochiching	--	--	416	--	--	--	--	104	76	--	--	--
Lake	--	--	1,051	--	--	--	--	--	--	--	--	--
St. Louis	--	--	1,513	--	--	--	--	104	--	--	--	--
Total	--	--	3,164	--	--	--	--	208	76	--	--	--
Northern Pine												
Aitkin	--	--	--	--	--	--	--	--	--	--	--	--
Becker	--	--	--	--	--	--	--	--	--	--	--	--
Beltrami	--	--	442	42	--	89	--	131	11	--	--	--
Cass	--	--	305	--	--	48	--	19	21	--	--	--
Clearwater	--	--	56	--	--	--	--	21	21	--	--	--
Crow Wing	--	--	--	--	--	--	--	--	--	--	--	--
Hubbard	--	--	--	--	--	--	--	--	--	--	--	--
Itasca	--	--	52	--	--	--	--	21	--	--	--	--
Lake of the Woods	--	--	--	--	--	--	--	--	--	--	--	--
Mahnomen	--	--	--	--	--	--	--	--	--	--	--	--
Roseau	--	--	--	--	--	--	--	--	--	--	--	--
Wadena	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	855	42	--	137	--	192	53	--	--	--
Central Hardwood												
Isanti	--	--	--	--	--	--	--	--	--	--	--	--
Kanabec	--	--	--	--	--	--	--	--	--	--	--	--
Mille Lacs	--	--	--	--	--	--	--	--	--	--	--	--
Morrison	--	--	--	--	--	--	--	--	--	--	--	--
Otter Tail	--	--	--	--	--	--	--	--	--	--	--	--
Pine	--	--	94	--	--	--	--	--	--	--	--	--
Sherburne	--	--	--	--	--	--	--	--	--	--	--	--
Todd	--	--	--	--	--	--	--	--	--	--	--	--
Winona	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	94	--	--	--	--	--	--	--	--	--
Prairie												
Pennington	--	--	--	--	--	--	--	--	--	--	--	--
Polk	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	--	--	--	--	--	--	--	--
State total	--	--	4,113	42	--	137	--	400	129	--	--	--

(Table 9 continued on next page)

(Table 9 continued)

WISCONSIN

Unit and County[1/]	All species	Species group: Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
Northeastern												
Florence	68,513	259	6,531	1,580	1,642	1,925	373	1,910	66	747	40,168	26
Forest	131,524	26	11,974	3,108	268	4,370	58	6,800	238	4,913	45,863	26
Langlade	106,927	--	4,363	700	329	1,367	14	760	166	3,667	50,037	--
Lincoln	62,650	--	3,421	557	1,609	2,599	134	947	394	2,013	33,959	--
Marinette	173,629	18	13,720	1,027	11,862	11,079	451	3,874	486	1,569	106,154	208
Menominee	56,000	--	--	17,757	4,968	441	2,397	35	--	480	17,195	--
Oconto	67,583	--	1,440	784	4,461	5,747	246	116	161	882	46,506	--
Oneida	132,952	--	8,718	907	5,305	7,781	1,480	3,772	501	3,280	58,005	--
Shawano	27,561	--	43	1,050	719	5,600	200	50	167	883	9,771	--
Vilas	123,788	--	10,677	1,800	15,688	12,427	8,101	2,780	12	1,002	43,178	--
Total	951,127	303	60,887	29,270	46,851	53,336	13,454	21,044	2,191	19,436	450,836	260
Northwestern												
Ashland	88,532	--	7,973	191	2,001	3,836	342	2,368	782	2,598	41,887	--
Barron	7,446	--	--	11	1,208	725	45	--	--	19	4,594	--
Bayfield	162,801	--	2,012	31	19,792	4,713	1,030	66	19	707	108,571	602
Burnett	36,188	--	49	--	10,424	3,083	73	17	--	27	21,644	--
Douglas	124,893	--	2,169	51	42,995	4,365	546	102	11	601	62,827	602
Iron	71,938	--	1,056	7,730	217	811	424	798	212	2,247	31,338	--
Polk	18,909	--	--	--	2,614	193	--	--	--	85	6,482	--
Price	118,630	--	2,971	431	856	2,703	9	1,050	942	7,499	45,010	--
Rusk	62,437	--	565	432	14	801	33	--	7	3,661	31,719	--
Sawyer	118,917	--	3,158	243	1,551	3,031	6	1,621	637	3,695	68,628	--
Taylor	54,715	--	1,269	319	27	826	10	228	378	2,081	21,766	--
Washburn	59,785	--	984	12	11,379	4,147	180	106	--	513	37,135	--
Total	925,191	--	22,206	9,451	93,078	29,234	2,698	6,356	2,988	23,733	481,601	1,204
Central												
Adams	30,041	--	--	--	13,658	10,971	1,855	--	52	85	669	--
Chippewa	16,925	--	29	36	334	298	--	--	--	734	9,206	--
Clark	43,397	--	50	96	530	2,833	20	--	--	851	23,475	--
Eau Claire	12,580	--	14	44	4,261	4,180	87	--	--	23	1,931	--
Jackson	30,955	--	--	--	1,478	19,942	--	--	--	--	4,513	--
Juneau	25,666	--	--	--	15,421	1,283	419	--	--	60	2,963	--
Marathon	42,862	--	1,396	1,011	1,525	2,099	204	169	29	421	29,557	--
Marquette	5,956	--	29	--	73	2,802	131	--	31	2	401	--
Monroe	16,391	--	--	53	9,483	3,783	131	4	--	51	509	--
Portage	20,748	--	147	345	1,599	5,107	1,842	59	640	383	6,015	--
Waupaca	15,502	--	57	122	68	6,723	465	15	--	567	3,543	--
Waushara	17,621	--	--	--	4,083	12,321	1,111	--	10	--	26	--
Wood	20,792	--	--	10	1,493	2,797	1,337	27	--	485	7,929	--
Total	299,436	--	1,722	1,717	54,006	75,139	7,602	274	762	3,662	90,737	--
Southwestern												
Buffalo	378	--	--	--	20	306	14	--	--	--	38	--
Dunn	10,574	--	--	--	3,230	6,560	500	--	--	--	118	--
Grant	338	--	--	--	15	323	--	--	--	--	--	--
Iowa	10	--	--	--	--	--	--	--	--	1	--	--
La Crosse	2,404	--	--	--	1,685	538	66	--	--	--	--	--
Pepin	233	--	--	--	23	114	--	--	--	--	--	--
Pierce	16	--	--	--	16	--	--	--	--	--	--	--
Richland	257	--	--	--	22	215	20	--	--	--	--	--
St. Croix	435	--	--	--	68	367	--	--	--	--	--	--
Sauk	7,243	--	--	--	1,820	4,897	494	--	--	2	--	--
Trempealeau	4,294	--	--	--	206	3,605	394	64	--	--	2	--
Total	26,182	--	--	--	7,105	16,925	1,488	64	--	3	158	--
Southeastern												
Brown	696	--	--	--	--	72	--	--	--	--	624	--
Calumet	21	--	--	--	--	21	--	--	--	--	--	--
Columbia	8,654	--	--	--	917	5,878	769	--	--	2	14	--
Door	416	--	--	--	--	--	--	--	--	--	416	--
Green Lake	2,004	--	--	--	199	1,635	170	--	--	--	--	--
Kewaunee	312	--	--	--	--	--	--	--	--	--	312	--
Manitowoc	12	--	--	--	--	--	--	--	--	--	12	--
Outagamie	599	--	--	--	--	121	29	--	--	--	420	--
Walworth	443	--	--	--	10	21	391	21	--	--	--	--
Waukesha	1,039	--	--	--	--	782	257	--	--	--	--	--
Total	14,196	--	--	--	1,126	8,530	1,616	21	--	2	1,798	--
State total	2,216,132	303	84,815	40,438	202,166	183,164	26,858	27,759	5941	46,836	1,025,130	1,464

(Table 9 continued on next page)

(Table 9 continued)

WISCONSIN

Unit and County[1/]	Species group											
	Basswood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwoods
Northeastern												
Florence	42	--	3,157	790	--	1,566	--	4,407	1,965	865	220	274
Forest	1,600	39	11,528	3,533	--	4,891	--	22,312	6,779	1,191	276	1,731
Langlade	1,613	--	9,159	2,593	--	4,726	--	18,563	6,474	1,081	35	1,280
Lincoln	1,177	--	4,748	673	--	1,466	--	4,454	3,229	895	--	375
Marinette	197	290	6,291	347	--	1,971	--	5,342	4,963	3,032	557	191
Menominee	--	432	569	768	--	2,829	--	4,767	2,610	572	180	--
Oconto	35	--	1,718	96	--	855	--	1,545	1,788	1,020	161	22
Oneida	1,412	16	19,690	1,631	--	1,424	--	8,290	7,605	2,802	104	229
Shawano	2	286	508	524	--	2,429	166	2,311	1,451	789	153	459
Vilas	453	--	13,164	1,755	--	837	--	7,108	2,901	1,697	144	64
Total	6,531	1,063	70,532	12,710	--	22,994	166	79,099	39,765	13,944	1,830	4,625
Northwestern												
Ashland	442	--	8,482	1,227	--	2,264	--	8,788	4,432	712	1	206
Barron	22	--	697	--	--	11	--	9	16	55	32	2
Bayfield	114	--	19,825	385	--	387	--	1,311	953	2,258	2	23
Burnett	--	--	402	--	--	14	--	64	25	312	52	2
Douglas	--	--	9,308	108	--	125	--	561	522	--	--	--
Iron	531	--	7,670	912	--	4,904	--	9,025	3,140	310	--	613
Polk	--	--	--	--	--	6,683	--	925	1,884	43	--	--
Price	1,287	--	15,221	1,574	--	6,531	--	15,687	14,058	1,716	31	1,054
Rusk	1,081	--	7,072	393	--	2,547	156	4,846	3,652	4,552	591	315
Sawyer	1,244	--	17,906	1,966	--	1,779	--	6,809	4,947	1,446	168	82
Taylor	754	10	5,017	700	--	2,744	16	6,829	10,201	1,114	312	114
Washburn	--	--	3,581	27	--	116	--	753	813	9	3	27
Total	5,475	10	95,181	7,292	--	28,105	172	55,607	44,643	12,527	1,192	2,438
Central												
Adams	--	--	53	--	--	11	--	68	64	1,790	764	1
Chippewa	235	--	2,850	284	--	667	--	1,112	786	261	85	8
Clark	73	--	3,913	247	--	1,553	5	1,680	2,937	3,699	1,412	23
Eau Claire	6	--	347	--	--	46	--	67	278	915	359	22
Jackson	--	--	644	21	--	45	--	104	1,311	1,958	849	90
Juneau	--	--	234	--	--	182	--	345	447	2,984	1,318	10
Marathon	163	21	914	412	--	1,284	21	1,369	1,419	641	187	20
Marquette	--	--	208	--	--	74	--	214	110	1,257	624	--
Monroe	--	--	113	--	--	143	--	234	304	1,220	361	2
Portage	6	--	444	--	--	161	--	443	695	1,953	843	66
Waupaca	16	34	309	70	--	422	10	568	1,111	945	413	44
Waushara	--	--	--	--	--	--	--	--	--	42	28	--
Wood	7	--	783	208	--	94	--	627	1,547	2,207	1,222	19
Total	506	55	10,812	1,242	--	4,682	36	6,831	11,009	19,872	8,465	305
Southwestern												
Buffalo	--	--	--	--	--	--	--	--	--	--	--	--
Dunn	--	--	52	--	--	--	--	5	5	104	--	--
Grant	--	--	--	--	--	--	--	--	--	--	--	--
Iowa	--	--	2	--	--	1	--	2	3	--	--	1
La Crosse	--	--	--	--	--	--	--	--	--	84	31	--
Pepin	--	--	--	--	--	--	--	--	--	54	42	--
Pierce	--	--	--	--	--	--	--	--	--	--	--	--
Richland	--	--	--	--	--	--	--	--	--	--	--	--
St. Croix	--	--	--	--	--	--	--	--	--	--	--	--
Sauk	--	--	3	--	--	5	--	8	8	5	1	--
Trempealeau	--	--	--	--	--	--	--	--	--	23	--	--
Total	--	--	57	--	--	6	--	15	16	270	74	1
Southeastern												
Brown	--	--	--	--	--	--	--	--	--	--	--	--
Calumet	--	--	--	--	--	--	--	--	--	--	--	--
Columbia	--	--	109	--	--	5	--	9	9	525	417	--
Door	--	--	--	--	--	--	--	--	--	--	--	--
Green Lake	--	--	--	--	--	--	--	--	--	--	--	--
Kewaunee	--	--	--	--	--	--	--	--	--	--	--	--
Manitowoc	--	--	--	--	--	--	--	--	--	--	--	--
Outagamie	--	--	--	--	--	10	--	10	9	--	--	--
Walworth	--	--	--	--	--	--	--	--	--	--	--	--
Waukesha	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	109	--	--	15	--	19	18	525	417	--
State total	12,512	1,128	176,691	21,244	--	55,802	374	141,571	95,451	47,138	11,978	7,369

[1/] Includes only those counties that supplied pulpwood in 1983.

Table 10.--Central States pulpwood production by State and destination, 1979-1983.

(In thousand standard cords, unpeeled)

Year	Illinois			Indiana			Iowa			Missouri		
	Total	Destination		Total	Destination		Total	Destination		Total	Destination	
		Central States	Other States		Central States	Other States		Central States	Other States		Central States	Other States
1979	102	52	50	204	89	115	69	56	13	101	42	59
1980	102	45	57	178	69	109	44	39	5	105	38	67
1981	100	43	57	185	68	117	32	26	6	111	44	67
1982	76	19	57	185	51	134	14	10	4	81	23	58
1983	91	31	60	226	62	164	16	11	5	114	39	75

Table 11.--Trends in receipts of roundwood and residue as pulpwood, Central States, 1979-1983

(In thousand standard cords, unpeeled)

Type of material and area	1979	1980	1981	1982	1983
Roundwood					
Illinois	33	19	19	--	--
Indiana, Iowa, Missouri	96	75	60	40	69
Total	129	94	79	40	69
Residue					
Illinois	59	28	3	--	--
Indiana, Iowa, Missouri	107	99	112	63	79
Total	166	127	115	63	79
All material	295	221	194	104	148

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Blyth, James E.; Smith, W. Brad
Pulpwood production in the North Central Region by County, 1983. Resour. Bull. NC-85. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station; 1985. 25 p.

Discusses 1983 production and receipts and production for recent years in the Lake and Central States. Shows Michigan, Minnesota, and Wisconsin production by species for each county and compares production by Forest Survey Unit with that of previous years. Presents 1983 production and receipt data for Illinois, Indiana, Iowa, and Missouri, and shows four production classes by county.

KEY WORDS: Roundwood, residue, receipts, Lake States, Central States.